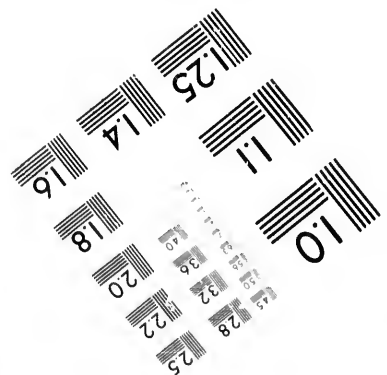
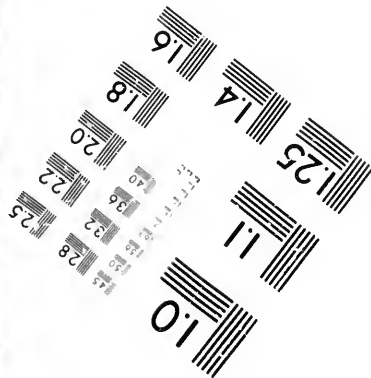
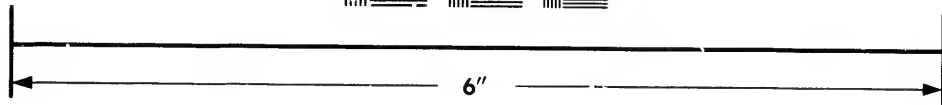
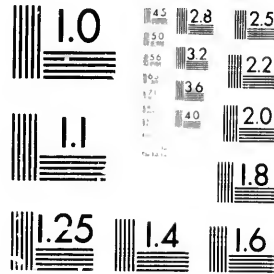


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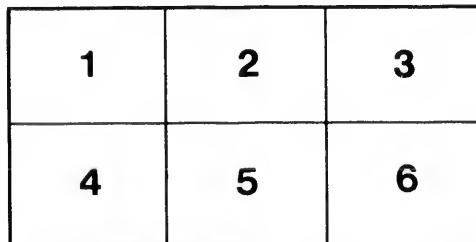
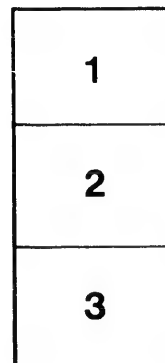
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PAPERS OF THE CONFERENCES

Held in connection with

*The GREAT INTERNATIONAL
FISHERIES EXHIBITION*

THE
FISHERIES OF CANADA

BY

L. Z. JONCAS

LONDON

WILLIAM CLOWES AND SONS, LIMITED
INTERNATIONAL FISHERIES EXHIBITION
AND 13, CHARING CROSS, S.W.



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International Fisheries Exhibition

LONDON, 1883

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AND 13 CHARING CROSS, S.W.

1883

1883
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International Fisheries Exhibition,

LONDON, 1883.

CONFERENCE ON MONDAY, JULY 2, 1883.

Hon. A. W. MCLELAN (Minister of Marine and Fisheries of Canada) in the chair.

In commencing the proceedings, the Chairman said Canada was a comparatively young country and might not be supposed to be as much interested in fisheries as some of the older countries, and some persons who had heard of Canada and the extent of the country and the diversity of employments would wonder why with so sparse a population there were any fishermen or any fisheries to speak of, when fishing as had been shown already was so much more dangerous and involved so much greater risk to human life than any other occupation. It was true that they had a large extent of country, and there was employment for all those who were there, and for all the millions who might come upon the land, but it was also true that although they had mining industries and although in the north there were vast forests from which lumber was sent to various parts of the world, although it was true that a comparatively small portion of the fertile soil was cultivated, yet it yielded abundance of the choicest food in its harvests and flocks and herds for all the people of Canada, and a large surplus to export; and the men who lived by the sea-side and on the banks of the rivers and by the lakes found so great a temptation to engage in fishing that they could not withstand it. He

believed they had as large a proportion of their people engaged in that occupation as any other country in the world. In the British Isles, where population was teeming, and every pursuit was crowded by people desiring to work that they might have bread, a large number were engaged in fisheries, but yet in Canada with their sparse population there were four times the percentage engaged in fisheries as were found here in the British Isles. Perhaps the mention of this fact might lead some people to expect too much from the paper which was about to be read, but as he had said before, Canada was but a young country ; the lecturer could not go back for centuries as Prof. Huxley did in describing the fisheries of the Mediterranean. Their grand-sires in the maritime provinces could give almost the whole history of the fisheries of Canada, and they told them how important a part those fisheries played in the settlement of the country. In those days when there were no railways, and no steam boats, supplies of food sometimes failed, but the settler always had something to rely upon in the fish which were to be found in the waters in front of his dwelling. He had heard of a good old clergyman who was greatly shocked at finding one day his little flock fishing on the Sunday, and insisting that the good old practice should be followed, of gathering a double supply of manna on the Saturday. He assumed this cause of complaint did not now exist, for a few weeks before he left Canada he had the pleasure of a conversation with a clergyman visiting Ottawa from Manitoba who told him that he had seen settlers going out in the winter cutting a hole in the ice and dipping fish out in a basket, but he made no mention of any desecration of the Sabbath, so that he assumed there was nothing to complain of in that respect.

FISHERIES OF THE DOMINION OF CANADA.

IF ever I have to regret not being familiar with the English language, it is on this particular occasion, when I have been chosen by my brother Commissioners to tell you something of the fisheries of the Dominion of Canada. But my fears are useless. If indulgence is to be met with, it is from a select audience, and I could not wish to come before a more select one than this is.

Being born in Canada, I have for the Dominion that affection that everybody feels for his native country. I have faith in her future.

I would have liked to have shown you how prosperous and flourishing she is beneath the glorious Britannic flag. I would have been proud to trace for you the rapid progress of that colony during the last ten years; but your time is valuable, and some one told me that I was not allowed to keep you here more than half an hour, and half an hour is rather a short time to go over three oceans and a considerable number of inland seas which are themselves small oceans. I will, therefore, confine my remarks to the Canadian fisheries.

In studying the history of England, in looking over the resources whence the greatness of this country—which we are proud to call our mother country—has arisen; we see that her commerce has been the source of that greatness. Furthermore, I may say, without fear of being contradicted, that the fisheries of the United Kingdom have been the basis of this commerce, and that England owes her present naval greatness to the hardy fishermen employed in these fisheries, and the comfort and happiness of

whom it is the object of this great International Exhibition to promote.

I have certainly not the intention of comparing Canada to England, but the fisheries of Canada can be compared with advantage to any other fisheries in the world and I feel proud to be able to state here, that our young colony, following the good example of England, already ranks the fourth amongst the maritime nations of the globe.

When we consider the thousands of miles of coast open to the fishermen of Canada, the 60,000 hardy men who now devote their time and their labour to the development of our fisheries, the millions of dollars which these fisheries produce annually, and the always increasing number of emigrants that the old continent sends us every year, we feel that a naval greatness is also in store for us in the future, and we look to our fisheries, and to our fisheries alone, as the cradle of our future naval strength.

Consequently, the public men of Canada felt a great interest in this international exhibition, and have been glad to take part in it in the hope to acquire an amount of knowledge on fishery matters, which will be of value to our fishermen in developing this great industry.

The honourable gentleman who presides at this meeting, and whom the Canadians have placed at the head of the Department of State devoted to our fisheries, knowing of what vital importance they are to the future of the Dominion, takes a great interest in all matters relating to marine and fisheries, and not only has he recommended the Canadian Parliament to grant as much support as possible for carrying out the objects of this exhibition, but leaving aside, for a while, his important duties as Minister, he has been pleased to come here and see that the Dominion of Canada is thoroughly represented in England.

The Dominion of Canada, bounded on the north by the Arctic Ocean, on the east by the Atlantic, and on the west by the Pacific Ocean, has an area of four millions and five hundred thousand square miles. Over that wide area are found some of the most fertile tracts of land in the world. Grand forests offering an immense field to the timber trade, beds of mineral wealth that but few lands can boast of, and rivers, lakes, and inland seas teeming with apparently unlimited supplies of food fish. The fisherman of any country must feel at home when he comes to a land the waters of which yield him annually a good remuneration for his toilsome and hazardous avocation.

The fisheries of Canada can be divided into two great classes ; the sea fisheries, and the fresh water, or lake and river fisheries.

The former are subdivided into the cod fishery, the herring fishery, the mackerel fishery, the lobster fishery, and the seal fishery. The latter comprises the salmon and trout fisheries, the white fish fisheries, etc.

The sea fisheries are carried on specially in what we call the maritime provinces, namely : Nova Scotia, Quebec, New Brunswick, and Prince Edward Island, whilst the provinces of Ontario, Manitoba, and British Columbia are celebrated for their inland fisheries.

In the river and gulf of St. Lawrence alone, Canada possesses more than nine hundred miles of coast, along which are to be found, at different seasons of the year, a greater abundance and variety of fish than in any other part of America.

The shoals of cod-fish, mackerel, herring, etc., which approach our shores for purposes connected with the reproduction of their species are immense, and, I was going to say, inexhaustible.

Of all the fish named above, the cod, the mackerel, the herring, and the lobster, have especially attracted the attention of the fishermen of Canada.

The cod fishery being the most important and the most valuable, the one that gives occupation to the greatest number of men, employs the greatest number of vessels, and produces, commercially speaking, the most advantageous results; I will give it the precedence over the others.

I will direct your attention to the modes of catching and of curing that fish, its yearly value for the Dominion, and the different markets we send it to. The haddock (*Morrhua aeglefinus*) and the hake (*Phycis Americanus*) being taken in the same waters, caught by the same means, and cured the same way as the cod-fish, will be comprised under the title of cod fishery.

The cod is so well-known everywhere that I may dispense with giving any description of it. Let it suffice to say that there are several kinds, of which the only one of any consequence to Canada is the common cod (*Gadus morrhua*) which is found along the coast of the Gulf St. Lawrence.

Speaking of the habits of the cod-fish I cannot do better than to quote here the words of the Honourable Dr. P. Fortin, M.P., now representative of the county of Gaspé, in the House of Commons of Canada, who has been for years commander of the armed schooner "La Canadienne" employed in the protection of our fisheries, and who is considered an authority in this matter.

"The cod inhabits cold and temperate climates. It is found along the coasts of Greenland, Labrador, Newfoundland, Nova Scotia, and the United States. Everybody has heard of the great banks of Newfoundland and of the immense quantity of fish to be found there."

"It abounds on the coasts of Iceland and Norway, visits the coasts of Scotland, England, and Ireland, and is also taken on the coast of France. But it does not appear to go beyond the latitude of Gibraltar, and has not, that I am aware of, been seen in the Mediterranean."

"The cod generally stays in the sea at a depth of from twenty to sixty fathoms, but when the instinct of reproduction is felt it approaches the shores, in pursuit of the caplin, of which it then makes its chief food, and remains six or eight weeks in twelve, eight, and even five fathoms of water. It is then that the taking of this fish can be, and is, most successfully carried on."

"The cod appears on the Canadian coast at uncertain dates, generally between the 10th of May and the 1st of June, though in many instances it has made its appearance in the latter end of the month of April. It has some favourite spots where it is found in greater quantities. These are the places which present the best advantages for the preservation and hatching of the spawn."

"Having deposited its spawn the cod withdraws to the shallow places called banks, where it finds always food in sufficient quantity to satisfy the well-known voracity of its appetite."

Formerly cod were found in great quantities and taken in abundance from Rimouski to St. Anne des Monts in the river St. Lawrence, and as far as New Richmond and even Carleton in the upper part of "La Baie des Chaleurs," but it has now almost entirely disappeared from those places, and fishing in them had to be given up.

About the 15th of December cod-fish appear to leave shallow soundings and the inshore banks, and go farther out to sea.

The season for cod-fishing varies with the different

provinces. In Quebec and Nova Scotia it is generally from April to November.

The cod-fishery is carried on in Canada either in vessels ^{sailing} of a tonnage of from 60 to 100 tons, or in open boats similar to those that are now exhibited in the Canadian Court.

The fishing in large vessels is carried on principally by the fishermen of Nova Scotia.

Vessels employed in cod fishery are manned by from ten to thirteen men, according to their tonnage. Generally the owner of the schooner, who also supplies the men with all the necessary fishing tackle, receives half of the fish which is caught, the fishermen retaining the other half.

“When the vessels have reached the fishing grounds they are anchored, by hemp or manilla cables, in from fifteen to fifty fathoms of water. Bait is obtained by spreading nets in the sea at some distance from the vessel, and the fishing is then begun with long lines, and carried on, by night as well as by day, in spite of wind and storm, until the hold of the vessel is filled with fish all split and salted. Then the vessel returns to port, the cod is landed, washed, dried and prepared for exportation” (Dr Fortin).

In the province of Quebec fishermen carry on the cod fishery in open boats, some of them near the coasts in the neighbourhood of the coves and bays where they reside, and some on the banks twenty or thirty miles from the shore.

Those among the fishermen who have the means of doing it, build their own boats, buy their fishing tackles, and have the advantage either of selling their fish fresh in the local markets, or of curing it and getting a better price

when it is dried from the speculators who, in the fall, visit every locality along the coast of the Gulf of St. Lawrence, for the purpose of buying cod-fish.

The fisherman who has no boat of his own goes to the capitalist who is engaged in the fishing business. This capitalist furnishes him with a boat all equipped and ready to go to sea, for the sum of five or seven pounds for the fishing season, with the express and written condition that all the fish caught by the fisherman in this boat will be sold to the merchant who furnishes the boat. The boats vary in dimensions, and are from eighteen to thirty feet keel, and their breadth of beam from six to ten feet. They are very sheer built, and the clinker work is usually of cedar. They are built like whale-boats, that is to say, they are pointed at the stem as well as at the stern. Their rigging consists generally of two sprit-sails or gaff-sails; some of those used to fish on the Miscou and other banks are schooner-rigged. They are built by the fishermen themselves, are good sailers, and behave wonderfully well at sea, especially those from Gaspé and Cape Breton.

“The inshore fishing is carried on with hand lines, and the fishermen always set out for the fishing grounds at two or three o'clock in the morning. On arriving at the place where they expect to find fish they cast anchor; then they bait their hooks with fresh fish and drop their lines into the water, each with a leaden sinker attached to it, weighing from two to four pounds according to the depth of the water and the force of the current.”

“Each of the two fishermen who man each boat has two lines when fishing in thirty or forty fathoms of water. When the fishing is in ten fathoms, or less, they use four lines each. If there are plenty of fish, as it is often the case in the spring, the fisherman has not a moment's rest,

when once he has begun ; for while he is hauling up one line the other is going down and before he has unhooked one fish from the former another fish is fast to the latter. The lines are always furnished with two hooks and oftentimes they come up with a fish on each hook ; the fishermen calls this "taking a pair."

"Sometimes there is no good fishing at the first anchorage ; in that case the anchor is weighed and the boat is sailed away in search of a better place. When the fish is plentiful it is not an uncommon case to see the boats coming ashore in the afternoon with 2000 pounds of fish, that is 1000 for each man."

"The fishermen generally remain on the fishing grounds until four or five o'clock in the afternoon, after which they hasten ashore in order that the cod they bring may be split and salted immediately, before it has time to heat or soften" (Dr. Fortin).

The bank fishing is made with long lines which our fishermen call "Norman lines." These lines consist of a long and strong line of from 600 to 1200 fathoms with hooks fastened along its whole length at regular distances by shorter and smaller lines, called snoods. The snoods are three feet long and are placed on the long line six feet apart to prevent the hooks becoming entangled. At each end of the long line is an anchor, a buoy line and a buoy, and the line is always laid across the tide ; for if the tide runs upon the end of the line, the hooks will become entangled and the fishing would be totally lost.

On getting to the bank or fishing-ground, the hooks being previously baited and the line neatly coiled in tubs, clear for running out, one of the two fishermen who are manning the boat sinks the line whilst the other is steering the boat.

The line remains in the water from six to eight hours, according to the time when sunk and also to other circumstances, after which time it is hauled in. In certain seasons of the year, especially in the month of September, two fishermen in a few hours, with a line of 800 fathoms, will take five or six thousand pounds of fish.

From the 15th of June to the 15th of October, two men carrying on the bank fishing actively can easily take 600 quintals of cod-fish. The average quantity caught by each boat is about 400 quintals, each quintal being worth six shillings in the local markets.

“The months of June, July and August are the most favourable for the cod fishery; not only because during that period, the air is frequently calm, there are long spells of fine weather, and storms are more rare than at any other time during the season, but also because it is then that the cod-fish resorts more to the coast either to spawn or in pursuit of the caplin or sable launce, on which it feeds, and because these fish, which serve as bait, are then more abundant and easier to take; for it must be remembered that there is no good fishing without fresh bait. The cod is not at all partial to salt-fish, and it is only on the great banks where the cod feeds chiefly on crustacea and mollusca that it bites at a line baited with salt herring or salt caplin.”

“It is therefore most essential for the fishermen to be always provided with fresh fish for bait, and they accordingly have herring, caplin and launce seines which they make use of every morning and every evening, to provide themselves with a sufficient quantity of little fish for the day” (Dr. Fortin).

On every large fishing establishment, from the end of May to the beginning of August two or three boats, each

of them manned by seven men called seiners, are employed day and night in going about the coast in search of the caplin, herring and launce. Sometimes they have to go 20 and 25 miles from the establishment. When they meet with a shoal of these fish, they cast the seine, load their boat and hasten home to distribute these little fish amongst the fishermen belonging to the same establishment. Each cod-fishing boat receives an equal share of the fish thus brought by the seiner.

When the caplin and sand launce have disappeared from the coast, or do not come near enough to the beach to be taken by the seine, the fishermen have to go out every evening and take herring and mackerel in drift-nets; or squid and other fish with hooks and lines.

Late in the fall, the only fish that can be taken for bait is the smelt.

The fishing from the beginning of the season to the fifteenth of August is called the summer-fishing; what is carried on after that date is called the autumn-fishing. All the cod taken until the end of September is salted and dried to be exported to foreign countries; what is taken from the first of October to the end of the fishing season is salted and packed in barrels and sent to the local markets.

FISH CURING.

Great care and attention as well as labour are required in the preparation of cod fish for foreign countries. Before explaining the mode in which cod fish is prepared, you will allow me to give a short description of what constitutes a fish-curing establishment.

Anybody wanting further explanation on this subject can come into the Canadian Court, where six models of

the most important fishing establishments of the world are exhibited, and he will receive all possible information.

A fishing establishment generally constitutes a small village by itself. On some of them the visitor can count no less than one hundred and twenty buildings. It is a collection or an agglomeration of wooden buildings, some of which serve to lodge the fishermen and other *employés* of the establishment, and others to receive the fish, either in its fresh or dried state, and to contain goods, the rigging of fishing vessels and boats, provisions, salt, &c.

An enumeration of some of these buildings with the name of each of them, will give you an idea of the importance and extent of these establishments.

There is first the house of the chief of the establishment, then the stage, the dried fish stores, the steam house, the goods shop, the flour and provision store, the rope and paint store, the pitch store, the salt store, the coal oil store, the wharf house, the carpenters' shop, the block shop, the coopers' shop, the iron and stores store, the forge, the rigging loft, the sale loft, the joiners' shop, the mould loft, the cook-house, the mechanics' cook-room, the shoremen work-shop, the fishermen cook-room, the shoremen cook-room, the ice house, the telegraph-office, the hospital, &c.

The house of the chief of the establishment is placed in the centre of the group of buildings, and in an elevated position, from which he can see all that goes on.

“The stage, which is the most important building in a cod-fish curing establishment, is placed as near as possible to the beach. Some establishments have four or five stages. They are large wooden buildings measuring generally eighty feet by fifty, at one end of which is a wharf called the stage-head, extending far enough into the sea for boats loaded with fish to come alongside of it at low tide. The

flooring of the wharf, formed of poles of fir or spruce, is divided into compartments, into which the fishermen, on their arrival, with boat loads of fish, toss them one by one with an implement called a pur."

"At the end of the stage nearest to the wharf are the tables on which the cod is dressed. In the middle is a passage with a level floor of strong planks, on which the shoremen can wheel with ease their barrow loads of salt or fresh fish. On each side are places for piles of fish, for salt and for troughs to wash the fish in."

"In the Canadian establishments three men are employed in the operation of dressing cod, namely, the cut throat, the header and the splitter."

"As soon as the cod has been landed on the stage, and put on the tables, the cut throat, armed with a two-edged knife, seizes the fish, cuts its throat, and having opened it down to the navel with a single stroke of his knife, passes it to the header. The header detaches the liver, which he throws into a barrel placed near him, and with the same hand tears out the entrails, after which with his left hand he cuts off the fish's head. The splitter now seizes the fish, and with a single stroke of his knife he removes the back bone" (Dr. Fortin).

From the back bone of the fish is taken that delicious article of food which is well known as cod-fish sounds. These sounds are either salted, and packed in barrels and sold in the local markets, or dried and sold to isinglass manufacturers.

The head of the cod is salted for local consumption ; but I regret to say that thousands of tons of entrails, offals, and even cod-roes are yearly thrown into the sea and wasted, whilst they could be converted into a good guano, if we had manufacturers of this article on our coasts.

"From the hands of the splitter the cod passes into those of the salter, who places it on a pile, spreading it carefully with the flesh up, and with a wooden shovel scatters a layer of salt over each row. The salter's art lies in putting on each fish just salt enough to make it keep well, but not enough to burn it."

"The cod is left piled in this way for four, six or eight days, according to the quality of the salt. Then the fish is carefully washed in large troughs, until all the salt is washed off, when it is put in piles again on the stage, in order that the moisture may drain off from it. After a day or two, if the weather is favourable, the fish are spread out one by one on flakes, in order that by exposure to the action of the sun and air they may be deprived of all the water they contain, and be reduced to that dry state in which they may be preserved for several years even in hot climates."

The small fish is put on flakes about three feet high, parallel to each other, with space of four feet between, to enable the men in charge of the fish to move round them.

The large size fish, containing more water, being thicker, and consequently more difficult to dry, is placed upon large flakes, one hundred feet square or more, ten feet from the ground and as much as possible built along the beach, where the heat of the sun is always tempered with a gentle breeze from the sea.

The first night after the fish have been put out, they are merely turned over flesh side down; after that they are gathered every night into piles of twenty or thirty each, and every morning they are spread out with the flesh up.

When sometimes about the middle of the day the sun gets too hot, the flakes, that are fixed on a pivot, are turned to prevent the fish from being burnt, or the fish is covered with small fir and spruce branches.

When there is a large quantity of fish on the flakes, the man who, in each establishment, has the superintendence of the operations of curing the fish, must be always on the look out, watching the sky and looking to every part of the horizon to see if clouds that threaten rain are gathering. At the least appearance of rain, or of a shower, orders are given to gather up the fish. The scene, then, is lively. The chief agent, book-keepers, clerks, carpenters, blacksmiths, everybody in the establishment goes to work, and when they have done, each goes back to his own business, satisfied and free from anxiety, for the cod, when placed in piles with its skin up, cannot suffer from the rain, unless the wet weather last very long.

“When the cod is sufficiently dry, large round piles of it are made, containing as much as 100 quintals each, covered with birch bark, and pressed with heavy stones. By the pressure of these stones it is deprived of the little moisture that remained in it. Before it is sent to market it is spread out again on the ground, covered with fine gravel, during the warm hours of one fine day to give it its ‘last sunning’ or ‘parting-sun.’”

“In fine weather and during the dry season, when westerly winds predominate, cod is easily cured and made of the first quality. It is not so when easterly winds prevail and bring upon our coast mist and rain that lasts for weeks; our fishermen are then in the greatest state of anxiety, and in spite of every possible care and precaution they frequently see the fish which it has cost them so much toil and exposure to danger to snatch from the sea, spoiled before their eyes, without its being in their power, by any means whatever, to obviate the destructive effect of the dampness; for once the fish has been exposed upon the flakes, it cannot be taken in the stores until it is perfectly dry.”

It is, I think, on the coast of Gaspe, in the province of Quebec, where the effects of the mists, generated by the Gulf Stream are least felt, that the finest cod in all America is cured. This is well known in the markets of Spain, Italy and Brazil where it is generally sent. Specimens of it can be seen in the Canadian Department of this Exhibition.

In order to guard against all risks from the weather, attempts have been made to dry cod artificially, but so far it has not succeeded as well as was expected, and I am of opinion that the agency of the sun and air are the best that can be employed for the drying of cod-fish.

VALUE OF THE COD FISHERY, AND MARKETS WHENCE OUR COD-FISH IS SENT.

When the cod-fish is dry enough to be sent to market as stated above, it is carefully culled. Three qualities of it are made, the marketable, the inferior, and the "refused," that is, the heavy salted and broken fish.

The large marketable is sent in bulk in vessels, varying in dimensions from 100 to 300 tons, to Spain, Italy, Portugal, and the Mediterranean ports; the small marketable is generally sent to Brazil in drums, containing 128 pounds, and the last quality is sent to the West Indies markets in casks containing 500 pounds.

By the Report of Marine and Fisheries of Canada for 1881 we see that the quantity of dry fish exported that year is 1,299,340 quintals, representing a value of 5,602,250 dollars.

Besides the cod-fish, there are 245,453 pounds of cod and hake sounds, and 333,310 gallons of cod oil, representing a value of 225,906 dollars. Total of exports from cod fishery 5,828,156 dollars. If to that sum we add the value of pickled fish sent to local markets and used in home con-

sumption, we will have a grand total of sixteen million and a half dollars.

Nothing more eloquent than a figure, somebody has said, and the above statement can give an idea of the importance of the cod fishery in Canada. It is undoubtedly one of our most important branches of industry, and one that gives rise to a considerable commerce.

I regret to say here that none, I may say, of our Canadian business men, have yet determined upon carrying on the cod fishery, and an export trade of cod-fish on a large scale. And yet nowhere in all America is there a greater abundance of fish of all kinds than on the coast of Canada.

What then has kept this industry from developing itself more widely in the Dominion? Many causes.

First of all, the want of capital, then the want of practical knowledge of the importance of the Canadian fisheries and of the precious resources they offer, and also, perhaps, the total absence, until these last years, of communication, during winter, between the central part of Canada and the principal ports of the Gulf St. Lawrence.

Some of these causes exist no longer. The Intercolonial Railway now connects the fisheries settlements of Nova Scotia, New Brunswick and Quebec with all parts of Canada, and capital, although not over abundant, is certainly not wanting.

The largest establishments in which the fisheries are carried on in Canada were founded 120 years ago by an enterprising Jerseyman. His means were then limited, he could not control a large capital, but the accumulated profits of the Canadian fisheries have enriched him and his children. They are now worth many millions, and have almost a monopoly of the gulf fishery trade. Who, having anything to do with fish and fisheries and all that belongs

to such industries, has not heard of the wealthy firm of Charles Robin & Co.? Besides Charles Robin & Co., there are also in Nova Scotia, New Brunswick and Quebec, many other firms engaged in the fishing business, and who, though on a smaller scale, are nevertheless doing large business. I may mention, D. Cronan, Brennan & Hart, H. Jones, from Halifax; Le Bouthiller & Bros., J. & E. Collas, J. Le Bouthiller & Co., Valpy & Le Bas, from Gaspé.

Of late a few other establishments have been started, but they are on a small scale. There is room for many more, and I hope that a new era in the history of the Canadian fisheries is at hand. I hope that this great International Exhibition will be for Canada fruitful in happy results, by making known the great commercial importance and the immense value of its fisheries, and will engage capitalists of this and other countries to invest in their profitable prosecution. The sea fishery next in importance to the cod fishery in Canada is the

HERRING FISHERY,

the value of which, according to our last statistics, was 1,721,822 dollars.

The herring arrives in the Canadian waters early in the spring, and as soon as the ice has disappeared from our coasts. From the month of April to the month of December it is seen in immense shoals on the Atlantic Coast of Nova Scotia, in the Gulf St. Lawrence, in the Gulf of Canso, in the numerous coves and bays formed by the Magdalen Islands, and in the Baie des Chaleurs.

In winter it disappears from our northern coasts, though a considerable quantity is taken during that time along the southern coast of New Brunswick.

In many of our bays, in the spring, the herring sometimes appear in such dense shoals near the shore, that the pressure upon each other, increased by the force of the tide, kills them by thousands.

“It is impossible without seeing,” writes Dr. Fortin, “to form a correct idea of the prodigious abundance of the ova of the herring deposited on all the coast where the herring spawns. I have seen, in many instances, the shore covered two or three feet deep with them for several miles. This will, perhaps, appear astonishing to some persons; but they will soon recover from their astonishment when they reflect upon the fact that the female herring has from six to eight millions of ova in its ovaries.

“Providence has no doubt ordained that there should be this prodigious quantity of ova, in order that there should remain enough for the preservation of the species in the numerical proportion required by the Creator, notwithstanding a loss of a great portion of them which are washed on shore by the waves, or are devoured by the little fishes.

“As might naturally be expected, the appearance of the herring along our coast does not fail to engage the attention of our fishermen, for whom its capture is a highly profitable employment.”

“No sooner in the spring has the first shoal of herrings been observed at any place along the coast, than all the fishermen in the neighbourhood repair to the beach with their nets, their lines, and all their other fishing tackle. Soon a great number of boats are plying in every direction about the bays and coves where the fish are expected. These boats contain the fishermen who go to spread their nets so as to intercept the shoals of herring, when seeking to approach the shore at night for the purpose of spawning.

The nets used by our fishermen are generally thirty fathoms long by five or six wide."

They are set in the evening, and in the morning early the fishermen visit them, take out the fish, and if necessary take the net ashore to clean it. Generally, in the spring, when the fishing is good, each net will take from five to ten barrels of fish during one night.

But there is a much more expeditious mode of taking herrings than with nets, and that is with seines. Seines for this purpose must be of large dimensions, say from one hundred to one hundred and fifty fathoms long, by from eight to eleven fathoms wide, with braces of two hundred fathoms long. These seines are expensive and require many hands to work them, so that it is not every fishermen that can have one. There are also the purse seines which are used to fish the herrings on the banks, sometimes twenty and thirty miles from the shore.

Seine-fishing for herrings is chiefly carried on by fishermen of Nova Scotia, in schooners of the same tonnage as those employed in the cod fishery.

Those who fish with nets, when once they have set them in places where they think the greater number of fish will pass, wait for the fish to come in and get entangled. Those who fish with seines, on the contrary, go out in search of the fish along the coasts they expect them to approach, with the seine in a large boat, manned by eight men. A score of seamen, in smaller boats, precede and follow the seine boat and look out in every direction for signs of the presence of shoals of herrings. If the surface of the water is agitated at any particular spot, they immediately proceed there. Their cruises are frequently unsuccessful. Sometimes they row for whole days without seeing a single fish; but they have also their strokes of good fortune, and

fishermen with seines of large dimensions often take at a single haul of the seine herrings enough to fill 500, 1000, 2000 or even 3000 barrels. One need not be surprised at such great results when one reflects that herrings in a shoal are so crowded together as to almost form a compact mass from the surface of the water to the bottom.

When the seine is so much loaded with fish it cannot be hauled on shore without risk of breaking it and losing the riches it contains, the braces are made fast on shore and the fishermen seine with small seines inside of the large one ; or if the fish are very thick, they are taken out with scoop nets or landing nets.

If the weather is calm or the wind off the land, the seine may be left moored in this way for several days or until all the fish have been taken out of it, but if, unfortunately, a sea breeze springs up and it begins to blow hard, the seine must be taken up at once or it will be torn to pieces by the violence of the waves. Many thousands of barrels of fish are lost in this way.

Herrings are salted either round or split and packed in barrels, containing 200 pounds, to be sent to the United States and West Indies markets. Only a small quantity is sent to the English markets.

They are of different qualities; those caught from August to October being far superior to the spring herring, and the best of all being the celebrated and well known "Labrador herrings."

MACKEREL FISHERY.

The mackerel is one of the most valuable of all the fish that visits the Canadian coast. Unfortunately, it is only these last years that this fish has been appreciated at its real value by the Canadian fishermen.

During many years the important mackerel fishery in the Gulf St. Lawrence was almost entirely left in the hands of our American neighbours.

Even now, I am sorry to say, there is not in the whole province of Quebec, where this fish is in great abundance, one single schooner specially employed in this fishery. The fishermen of this province generally contenting themselves with taking mackerel for home consumption, or for bait for the cod-fishery.

The fishermen of Nova Scotia, New Brunswick and Prince Edward Island understand their interests better, and they have, every season, prosecuting the mackerel fishery, a fleet of fine vessels, so improved in symmetry as to bear fair comparison with the American mackerel schooners, which are reputed to be the finest vessels, and the best sailers of their class in the world.

These schooners are usually of from 60 to 100 tons. They have little depth of hold, great breadth of beam, take very much fore and aft, and carry large cotton sails, which enable them to sail fast, even with a light breeze. They are met with everywhere in the southern part of the Gulf St. Lawrence, during the months of July, August and September ; and from a distance look more like a small squadron of yachts than a fleet of fishing vessels, so beautiful are their masts and sails, and so neat and clean are they kept.

But on a nearer approach this is found to be an error, for on the decks of these vessels are to be seen crews of ten or twenty men all occupied either in catching fish, in repairing fishing implements, or in splitting and salting the fish that have been taken ; and what is more striking is the order that reigns on board of these schooners.

The mackerel fishing is carried on in two ways, with the seine and with hooks and lines.

The mode of seining I have already described in speaking of the herring fishery. Dr. Fortin will tell us how the hook and line fishing is done.

"Before sailing from their port of outfit for the Gulf St. Lawrence, the fishermen provide themselves with several barrels of very fat little fish called "poggies," to serve as bait and as food for the purpose of attracting the mackerel to the surface of the water. At a later period, when the "poggies" are exhausted, recourse is had to the offal of the mackerel for bait, and it is prepared in this way:—whole fishes or the offal of fishes, either "poggies," mackerel or others, are chopped up very fine in a machine something like a straw cutter, and then put into a large bucket full of salt water; the mixture is then stirred for a long time with a small paddle.

"As soon as the schooners have reached the places where shoals of mackerel are to be found, they keep cruising backwards and forwards, and the moment there is the least appearance of fish near a vessel, the jibs are taken in and the vessel is brought to with the mizen sail and main sail veered half round. Feed is then scattered all around, the fishermen seize their lines, bait their hooks with small pieces of the skin of the neck of the mackerel or any other fish and throw them into the water. The lines are fine and made of hemp or cotton, generally the latter; they are from six to eight fathoms long and to the end is fastened a small sinker of polished pewter, oblong in shape and weighing about two ounces, to one end of which is soldered a middle sized hook." (Dr. Fortin.)

Each fisherman plies two lines, one in each hand and leans on the rail of the schooner while fishing. He very

seldom pays out more than four or five fathoms of line, for the mackerel attracted by the chopped fish thrown overboard, rise to the surface.

From fifty to thirty barrels of mackerel may be taken in six hours by a crew of fifteen men.

The mackerel fishery is difficult and therefore requires to be carried on with sagacity and perseverance, but it is generally successful, brings in large profits, and is certainly worthy of the attention of capitalists.

Like the herrings, the mackerel are salted, and packed into barrels of 200 pounds and sent to the English, United States of America, and West Indies markets. Some are preserved in cans and some are also sent to the markets in a fresh state.

Over 74,900 barrels of pickled mackerel and 394,489 cans of the same fish have been exported from Canada last year. If we add to that, 131,000 barrels and 283,000 cans which have been sent to the local markets and what is used in home consumption, and we will have a total value of 1,694,942 dollars for the mackerel fishery.

The mention of canned mackerel brings me to speak of another important branch of the Canadian sea fisheries, one that is increasing every year, and that gives remunerative employment to a large part of our population. I mean the

LOBSTER FISHERY.

This industry has but lately assumed a commercial importance in our country.

Ten years ago the lobster fishery was almost unknown in Canada, and carried on merely in the provinces of Nova Scotia and New Brunswick.

In 1873 these two last provinces had sixty-four factories

in operation for the preparation and canning of the lobsters, and during a period of ten years no less than four hundred of these establishments have been built and are now in full operation.

The province of Prince Edward Island, where this industry was unknown in 1873, possesses to-day 118 factories, which last year sent out to different markets three millions and a quarter cans.

A large amount of ready money is circulated in Canada by this industry. Besides the erection and repairs of buildings, tin and iron work, boat-building, fuel-cutting, truckage, and other expenditure, fair wages are paid, directly or indirectly, to thousands of hands, male and female. Hence the industry is of considerable importance in the general economy of the Dominion.

According to the Fisheries Statement of 1882 the lobster fishery of Canada has yielded seventeen millions and a half cans, representing a commercial value of nearly three million dollars.

These figures not only indicate the extent of the interests connected with this branch of industry, but also suggest the danger of over-production, both of which facts point to the necessity for economising and perpetuating the natural supply.

There is nothing easier than to exhaust a shell-fishery, but also nothing harder than to revive it, and the Government of the Dominion, alive to this fact, is taking measures to prevent any indiscriminate fishing of the lobster on our coast.

Doubtless, if the fishing that is now carried on was not subjected to strict regulations, all persons interested in it would prosper for a short time, and the country would appear to benefit by the rapid and extensive development of this

resource, but a period of reaction would necessarily ensue. Consequently, if we wish to perpetuate such a valuable possession, it is wiser to economise it in time, than to be obliged, later on, to make extreme and costly endeavours to arrest its decline, or to restore it from complete exhaustion.

SEAL FISHERY.

The herds of seal that frequent the Gulf St. Lawrence and the Atlantic arrive there in the month of November. They come chiefly into the gulf through the Strait of Belleisle. They keep very close to the coast of Labrador and Newfoundland, penetrating into all the bays, and not going far out from land when doubling the points and capes. They are fond of approaching the shore and landing on sandy beaches or flat rocks to bask in the sun; but at the slightest noise, and especially if they perceive the fishermen, they make for the sea and disappear under its water.

Seals are of great value, not only on account of the thick layer of fat between their skin and their muscles, which yields an oil superior to that of the whale, but also on account of their skin, which tans well and makes an excellent leather.

The importance in a commercial point of view was soon perceived by the first mariners who visited the Gulf St. Lawrence, for no sooner was Canada discovered, than the seal fishery was prosecuted on our coasts, and if we are to believe the accounts which have come down to us, in manuscript and by tradition, of several voyages to the coast of Labrador during the last century, immense numbers of them were taken at that period. Then, as now, nets were used for the purpose of capturing these marine animals.

These nets are made of a hempen cord, which is very

strong, although not more than the twelfth part of an inch thick. The meshes are eight inches square and will admit the head and neck of the seal. Some of these nets are more than six hundred feet long by sixty feet wide.

The usual time for the seals to pass near the shore on their migratory voyage being known, the nets are set a few days before. One of the fisherman is posted as a sentry on a rock, a little in advance of the fishery, to give notice of the approach of herds of seals, and the moment that any appear in the fishery, the signal is given, and the fishermen hasten to raise by means of a capstan, a net sunk by leaden weights, to the bottom of the water, at the entrance of the fishery. With this net they close the opening through which the seals made their ingress; and as soon as this operation is completed, and the seals are fairly imprisoned, the fishermen jump into their boats and enter the fishery shouting and beating the water with their paddles. The frightened seals, trying to escape, dive down and run their heads into the meshes of the nets, which are kept always open by means of cables round the borders of the nets.

As soon as the seals are caught in the meshes, the men under-run the nets, knock on the head those that are not strangled and carry them all on shore in their canoes.

The autumn seal fishing takes place on the coast of Labrador, at the end of November, and in December, and is very arduous by reason of the severity of the cold at that season.

The seals are no sooner taken out of the water than they become frozen; and in that state they are put into stores and it is not until the spring, when the warm rain has softened them, that they are cut up and their fat melted.

Seals are not only taken in nets near the shore, in the

manner I have just described, but they are also pursued in every direction, and are sought for on the ice-fields, not only in the Gulf of St. Lawrence, but also in the North Atlantic Ocean.

The expeditions that are fitted for this latter kind of fishing, or rather of hunting, require to start early in the spring, in order to find the seals on the ice-fields; for, once they are in the water, they can set the most experienced men at defiance, and it is useless to pursue them.

Large capital is invested in the seal fishery, especially in Newfoundland. In the Dominion, so far, this fishery has not been carried on on a very large scale, it being limited to Magdalen Islands and Labrador.

It has produced last year 75,242 seals, and 220,157 [??] of oil; the whole worth 332,521 dollars.

The Government of Canada, in order to develop our vast maritime resources, has spent about five millions of dollars to improve and render secure harbours along our coasts, and to establish telegraphic communication between the fishing districts of the Dominion.

The area covered by this telegraphic system, that we owe to the energetic efforts of Dr. P. Fortin, is about 27,000 square miles of our most prolific fishing grounds.

All our fisheries stations are connected by it, and every day at the different telegraph offices, bulletins are displayed and distributed, indicating the probability of the weather for the coming twenty-four hours, the existence of bait in particular localities, the whereabouts of fish, &c.

This telegraphic system, which is illustrated by the maps and blank of bulletin issued by the Department of Public Works of the Dominion, and which can be obtained at the Canadian Court of this Exhibition, has not only proved of great value to our fisheries, and afforded great encourage-

ment to capitalists and fishermen engaged in them, but also contributes largely to render safer the navigation of the River and Gulf St. Lawrence, to guide the vessels out of danger, to reduce the rate of insurance, and to encourage the shipping trade.

Mr. W. F. Witcher, Commissioner of Fisheries for Canada, being requested to give his opinion on the advisability of establishing telegraphic communications along our coasts, writes in 1876 :

“The pursuit of an industry such as that of fishing within nine hundred miles of coast is necessarily attended by many dangers and peculiar drawbacks.”

“Exposure of life and property is frequent. Success depends very much on the seasons. Many kinds of fish of erratic habits are eccentric in their movements. Plenty and scarcity may alternate in places, from which the settlers depending wholly on any fishery have no escape. Within twenty miles of settlement, on a barren and uninhabited coast, the fish may strike and remain without any possibility of their whereabouts being known at other places ; they may be abundant beyond the capacity of shoremen or vessels to catch them, and yet fishermen not far distant may be unable to procure even sufficient for their winter supply. Vessels may return empty in one season from fishing grounds where previously or afterwards the fish abound. Some may lose the greater and best part of each season in searching after the shoals. Still the waters teem with fish, and sooner or later they approach the shore, or frequent the shallows. It seems possible for the spirit of modern improvement to devise some means of providing against these vicissitudes. That plan which strikes me as the most feasible is a telegraphic system, connecting together the main fishing stations. The idea of signal stations, from

which to observe and notify movements of fish, has been carried out to some extent in Norway, Holland, Germany, Sicily, and on the coast of Cornwall. It has proved of material assistance to the fishermen, and aided considerably in developing the fisheries of each of these countries."

"There is no doubt it would prove advantageous to Canadian fishermen. Besides affording greater inducement and security to employers of capital, and inspiring confidence in those exposed to danger and hardships, it would undoubtedly enable us to increase production and enlarge our exports."

Besides the money spent in the two great services above mentioned, our Government distributes yearly a sum of one hundred and fifty thousand dollars as a bounty to our fishermen and owners of vessels and boats.

The short time I have at my disposal does not permit me to speak of other sea fisheries, such as the oyster, the halibut, the whale fisheries, etc., which, though not possessing such a great commercial value as the cod and other fisheries, are not, nevertheless, without importance.

I will now draw your attention to our freshwater fisheries.

FRESHWATER FISHERIES.

Honour to whom honour is due. I will first speak of the salmon, which is justly styled the king of our freshwater fish.

When Canada was first settled our rivers were celebrated for the number of salmon that were taken in them.

Afterwards, the rivers ceased to be so well stocked with fish in consequence of too many being taken at all seasons of the year, and of the want of laws and regulations for their preservation. But within the last few years, there has

been a great change ; good laws and judicious regulations limit the fishing to certain seasons of the year, and prescribe the kinds and number of fishing implements that may be used. Officers have been appointed to enforce the law ; the coasts and rivers are well protected ; from the eleven fish-breeding establishments which are under the control of the Government, millions of young salmon are distributed yearly in our rivers, and we have every cause to hope that in a few years our rivers will be replenished, and we shall be again able to procure and to send to foreign markets, at moderate prices, this delicious fish which ranks so highly amongst the luxuries of the table. This view is fully borne out by the official returns of our inspectors of fisheries, and overseers, whose returns for the year 1882 give a most satisfactory account of the greatly increased number of salmon in the rivers and coast fisheries of the Dominion. Specially is this noticed in the rivers where young fry have been distributed from the hatcheries. I am happy to say that letters addressed to me from Canada, last week, state that the catch of salmon this season will be, according to all appearances, much superior again.

Although the salmon fishery has somewhat decreased in abundance in Canada during the last few years, it has yet, nevertheless, a considerable importance, and is a source of wealth for many of the inhabitants of the Dominion, besides being a source of pleasure for a great number of wealthy gentlemen from England, United States of America and other countries, who every summer visit our rivers to enjoy the salmon fly-fishing.

Who amongst those anglers does not know, or at least has not heard of, the far-famed Ristigouche, Cascapidiac, Gaspe, and other Canadian rivers ?

To prove the importance of our salmon fishery I cannot

do better than again consult the reports of our statisticians.

I find in the last statistics we have on this subject, that the salmon fishery produced in the year 1881: 6,038 barrels of salted salmon; 2,614,446 pounds of the same fish fresh and smoked, and 8,500,000 pounds preserved in cans; total 12,322,046 pounds.

Supposing for every fish taken an average weight of 15 pounds, we shall have in 1881 821,469 salmon caught in the Canadian waters. And the returns for the season 1882 will certainly show an increase on the above catch.

The Province of British Columbia alone, the factories of which have preserved in 1881 8,000,000 of pounds, will send to the markets this year 12,000,000 of cans. And yet, Mr. Anderson, Inspector of Fisheries for this Province says in his report, dated 1st January, 1882, that the canneries of British Columbia, notwithstanding the abundance of fish, could not be worked up to their full capacity, owing to the deficiency of labour, arising from the increased demand for railways and other purposes.

Most of the Canadian salmon is caught along the shores of the Gulf of St. Lawrence and near the estuaries of the rivers where this fish goes for the purpose of spawning, and in the rivers of British Columbia.

Some of our pickled salmon reach the British market, but it is chiefly the salmon preserved in cans that we send there.

So far, almost all the fresh Canadian salmon has been sent to the United States markets; but attempts have been successfully made to send it to the English markets; and I hope that after this Exhibition a much greater quantity of it will be exported there.

TROUT, WHITE FISH, &c.

All the Canadian rivers abound with trout of all kinds, of which the best are the sea trout and the salmon-trout. But it is chiefly in the lakes of the Province of Ontario that the white fish and trout fisheries are carried on on a large scale.

These lakes, which I have called inland seas, are perhaps the largest bodies of fresh water in the world.

Lake Superior alone covers an area of thirty-one thousand square miles, while Lakes Erie, Huron, and Ontario, put together, have an expanse of fifty-two thousand square miles.

The numerous rivers that empty their waters into these lakes, as well as the lakes themselves, teem with an abundance of different kinds of food fishes, which are well known for their flavour and their delicacy; and the fishermen of Ontario can choose between the salmon-trout, weighing as much as eighty pounds, the white fish, which is equal in flavour to the salmon itself, and the sturgeon, the pickerel, the pike, the bass, the sunfish, &c., &c.

Fishing in the Canadian lakes is carried on with gill nets and trap nets, and the vessels used are either sailing-boats, varying in dimensions from twenty to thirty feet, or small steamers which are called fishing-tugs.

These small steamers—two models of which can be seen in the Canadian Court—are fifty feet long, and twelve feet beam. They are generally owned by fish merchants, who engage men to carry on the fishing for them. These fishermen are on wages, and do not share in the profits of the catch; but if the fishing is successful, they sometimes receive a bonus from the proprietor of the steamer.

These fishing steamers have a great advantage over the

sailing-boats. While half the crew who man them is occupied in taking in the nets that have been set the day previous, the other half is setting out clean nets, and as soon as these two operations are finished, the steamer hastens to the nearest railway-station, and the fish which have just been caught, is immediately sent, in a fresh state, in ice, some to the Canadian cities and some to the United States markets.

The produce of the lakes fishery last year was 4,500,000 pounds of white fish sent fresh to the markets, 5,079 barrels of the same fish salted, 9,758 barrels of trout and 41,360 barrels of sturgeon, bass, pike, maskinonge and other fishes ; total, 56,000 barrels and 4,500,000 pounds.

And yet the population of the Province of Ontario being chiefly composed of farmers, only a small capital is invested in the lakes fisheries. I have no doubt that the amount of fish now taken could be annually doubled and even trebled if a larger number of men were employed in the development of this industry.

I have not said anything either of the smelt fishery, which in New Brunswick and Nova Scotia gives employment, during the winter months, to many hundreds of the inhabitants of those two provinces, and by which fishermen can make from \$200 to \$300 a day, or of the eel, the bar, the sturgeon and many other freshwater fisheries. I may perhaps have another opportunity to tell you of the extent and value of these. It will suffice to say that the export of the freshwater fisheries of the Dominion, although sold at a low figure, produced last year the sum of 3,174,533 dollars.

Statistical reports do not give with any pretence to accuracy the value of home consumption, but, as fish in Canada is a very cheap article of food, it is largely used in every family.

His Royal Highness the Duke of Edinburgh in the valuable and interesting papers that he has written on the British fisheries states that "the total quantity of fish brought to London in a year, represents a consumption of 67 pounds per head of the population of the Metropolis."

If in London, where the price of fish is equal to and even higher than meat, such a quantity is consumed yearly, I may say that in Canada, where fish can be obtained at a merely nominal figure, the above quantity is almost doubled, and it is safe to say that 450,000,000 pounds of fish, or 100 pounds per head, is yearly consumed by the Canadian population ; which, at three cents or two pence a pound, gives a sum of thirteen million and a half dollars.

Adding to these thirteen million and a half the amount of the exports, we have as the yearly value of the Canadian fisheries a grand total of twenty-seven million dollars, or over five million and a half pounds sterling.

The above figures speak for themselves, and show the richness of the Canadian waters. As I have already said the sea fisheries of Canada require nothing else than capital to be more remunerative than they actually are.

Many of the numerous practical men who are daily visiting this Exhibition ask the following questions—

How is it that so little of your fish reaches the British markets? Why do you not send us your dry and boneless cod, your pickled and fresh fish, etc.

To this we may answer: 1. Canada is sending here a good quantity of salmon, lobsters and mackerel preserved in tins ; 2. One cargo of fresh salmon, was some years ago sent to this market from Canada, and I have reason to believe that the same dealer, satisfied with the practicability of the trade, will make a further shipment this season ; 3. I sincerely hope that this great International Fisheries

Exhibition will have the effect of making our dry and pickled fish better known and better appreciated, and that a much larger trade, beneficial to both countries, will be, hereafter, carried on between Canada and the Mother Country.

Before concluding these remarks, you will allow me to say a few words of the laws and regulations protecting our fisheries.

First, are fisheries exhaustible, and consequently, is there any necessity for their protection?

This question the eminent Professor Huxley, in his valuable address, at the opening of these conferences, has answered to a certain degree.

It seems admitted by everybody that the freshwater fisheries can easily be exhausted by indiscriminate fishing.

As to some of the sea fisheries, namely: cod, herring and mackerel fisheries, &c., opinions differ, and though, considering the immense power of reproduction that Providence has given to the above named fishes, I would feel inclined to think with some scientists, that it is impossible to exhaust the *deep sea fisheries*, whilst upon their feeding grounds, there are nevertheless facts leading to conclude that *deep sea fishes* should be protected specially when they come near to the coast for the purpose of spawning.

So far, every one of the learned gentlemen who have come here to speak on the British fisheries, has stated that English fishermen having to go farther out to sea, consequently have to incur more expenses and are exposed to greater dangers in order to provide the markets with fish.

If I am allowed to add to what these gentlemen have said of the British fisheries, the experience that twenty-five years' observation on the coast of the Gulf of St. Lawrence, where our largest sea fisheries are carried on, has given me,

I will say that there is certainly, owing to an indiscriminate fishing in the time they are spawning, a decrease of our sea fishes about the coasts of Canada.

For instance, in the River St. Lawrence, from Rimouski to Cap Chat, and in the upper end of the Baie des Chaleurs, where a few years ago the cod fishery was carried on on a large scale along the coast, this industry had to be given up, the cod-fish having entirely disappeared.

Formerly, and I may even say lately, in the district of Gaspé, along the coast of Nova Scotia and New Brunswick, at no more than a mile from the shore, the fisherman could take every day a good quantity of fish ; now the inshore fishing is not so remunerative, and fishermen have to go much farther out to sea to take the same quantity.

Then the expense of fitting out a boat was so small that eight shillings a quintal was considered a fair price for cod, but now this price is more than doubled.

No more than ten years ago the caplin was so abundant on our coasts that large quantities of it were used to manure the lands. Now our fishermen, through their own fishing, are obliged to go twenty-five, and sometimes forty miles to get enough of this fish to bait their lines.

Some one will perhaps say, your official reports show an increase, every year, in the number of fish caught. The reports are correct ; but that does not necessarily prove an increase in the actual quantity of fish, for the number of vessels employed in our fisheries is also increasing every year. Let us also consider, that the men having to go twenty-five and thirty miles from the shore to fish, much more time is lost than when the fishing was pursued close to the coast. The fishermen cannot put out when there is a strong sea breeze. They are often kept on shore by storms which last for whole weeks. Sometimes they set out in

fine weather, and no sooner have they reached the fishing grounds, than the wind rises and they are forced to return to land as quickly as possible ; and a season seldom passes, without our coasts being visited by squalls, so violent and so sudden, that the poor fishermen are obliged to scud home under bare poles and to remain in-doors for whole days at a time. Consequently, the time actually given to fishing is not so long.

In Norway and Sweden, if I am not mistaken, fishermen have also to go beyond the limit where the cod-fish was usually caught in great numbers ; and the statistics furnished by the inspectors of fisheries, show a large decrease in the number of cod-fishes caught in those countries during the last three years.

Is the failure of the Norwegian fishery due only to the severity of the weather, or similar temporary causes ? These are questions which I decline to answer, and that I leave to scientists and practical men to decide. Along the coast of Norway from Stavanger to Aalepind the herring resorts to spawn. Some years ago this important fishery was yielding as much as 800,000 barrels of fish, but since the year 1876, it has been gradually decreasing, and it hardly produces now 20,000, or 25,000 barrels annually.

Taking together the statistics of all the countries where the herring fishery is carried on, it may be said that, notwithstanding the immense quantities that have been, and are yet taken, the herring does not seem to diminish in number ; that it may present itself occasionally in smaller numbers at certain places, but that this is rather due to certain circumstances arising from the weather or the action of the wind.

This, in my opinion, is an erroneous calculation. The same quantity of fish may yet be taken ; but let us con-

sider for one moment the improvements made in the fishing implements, and the increase in the number and size of fishing crafts. Boats employed in the herring fishery are now three and four times as large as those which were used twenty years ago, and instead of five or six nets, each boat has now forty or fifty nets of larger dimensions and better quality. Should not this fishery be more productive now than it was? If the herring were not decreasing in number, should not a fisherman, fishing with ten nets take more of them than when he was fishing only with three?

Great exertions are now being made by the several countries where fish culture has been introduced to apply this science towards the propagation of cod, herring, mackerel, and other sea fishes, and consequently protect sea fisheries.

May I ask what would be the use of endeavouring to increase, not only freshwater fishery, but sea fishes as well if the sea fisheries were inexhaustible?

The facts that I have just submitted for your consideration, and many others that could be mentioned, prove sufficiently the necessity of giving to the sea fisheries a fair protection.

Supposing even the truth of the theory that sea fisheries are inexhaustible, which theory I am not ready to admit, I think that in order to diminish for the fishermen the expenses of outfit, and the numerous dangers to which they are daily exposed, in order especially to procure to the poorer classes a cheap supply of fish, it would be advisable to take the means of submitting the sea fisheries to judicious regulations.

The legislators of Canada do not seem to believe that sea-fisheries are altogether inexhaustible, for in the laws

that they have made to protect them, we read the following clauses :—

“No one shall use mackerel, herring, or caplin seine for taking cod-fish, and no cod-fish seine shall be of less size mesh than four inches in extension.”

“No caplin seine will be used in herring fishing.”

“With a view to protect the oyster beds in different parts of the bays and coasts of the Dominion, it shall not be lawful for any person to take oysters, or in any way to injure or disturb them, except during times and on terms permitted by special regulations, under a penalty of not more than one hundred dollars, and not less than forty dollars.”

Strict regulations there are also, protecting the freshwater fishes.

In Ontario and Quebec, salmon cannot be taken with nets between the first day of August and the first day of May; between the fifteenth day of August and the first day of March in the provinces of New Brunswick and Nova Scotia; but fly-fishing is allowed in Quebec and Ontario between the first day of May and the first day of September, and in Nova Scotia and New Brunswick from the first day of March to the fifteenth of September.

The use of nets in the waters of the different provinces is regulated by law.

The meshes of salmon nets must be at least five inches in extension, the distance of nets from each other never less than 250 yards, and no salmon be taken within 200 yards of any spawning-ground. All salmon nets must be raised from Saturday evening until Monday morning of each week.

“It is not lawful to fish for or catch any white-fish, in any manner, between the nineteenth day of November and

the first day of December, between the thirty-first day of May and the first day of August in the province of Ontario, or between the thirty-first day of July and the first day of December, in the province of Quebec."

"Gill-nets, for catching salmon-trout or white-fish shall have meshes of at least five inches extension."

Fishery officers and overseers are appointed by the Government to enforce these laws and many others which it would be too long to enumerate here.

Understanding the real value of our sea and freshwater-fisheries, their immense importance for the Dominion, our legislators have acted very wisely, I think, in subjecting them to strict regulations.

And in taking the means of economising and perpetuating such important sources of wealth, they are, in my humble opinion, working for the welfare, and in the true interests of our present and future fishing population.

DISCUSSION.

Mr. R. M. WATSON (Montreal), moved a vote of thanks to Mr. Joncas for his very able paper.

Mr. JAMES C. PARKER (London City Mission) seconded the motion. He said he had been visiting the poor of London for the last thirty years, and this question of fisheries was one of great practical importance to them. They were very fond of fish, and would be glad to have a supply at a low price. He used to think that he had done his duty to his mortal body if he had a fish dinner once a month, but since the opening of this Exhibition he had gone in for a fish dinner two or three times a week, and all his friends said he looked much stronger and better for it; and he must say that if he had not had those fish dinners

he should not have had the courage to get up and attempt to make these few remarks. There were four millions of people in London, and what was to become of them, unless the supply of fish was increased, he did not know.

The resolution was put, and carried unanimously.

Mr. HERBERT HORMSELL (Bridport), remarked that Mr. Joncas had mentioned Gibraltar as the southern limit for cod fisheries, but in so doing he must have forgotten the fishery at the Canary Islands. There was a large fishery going on there, conducted by a Spanish Company, where some 300 or 400 boats were employed, and the fish caught were dried on the coast of Morocco. That was certainly the most southern fishery of cod. He had been rather struck by the remark of Mr. Parker, as to the intellectual stimulus given him by a fish diet, and he believed medical men generally agreed with the opinion that there was a large amount of intellectual energy given by the phosphorous contained in fish food. As to the nutritive value of fish, it was a great pity that the inhabitants of London did not more thoroughly recognise its importance. He had been much struck in passing through the United States section, by a paper which was exhibited there, showing at a glance the comparative nutritive value of fish as compared with beef and other meats, and he thought probably it would astonish many persons present when he told them that dried cod was infinitely more nutritious per pound than the sirloin of beef. As to the rapid growth of Canadian fisheries, he might state that the town from which he came owed its main existence to fisheries. It was a thriving little town, and about 100 years ago the first shipment of fishing-nets and tackle was made from Bridport to the Canadian fisheries through a Jersey firm. This corroborated what had been said as to

the antiquity of the Jersey fishery establishments on the coast of Labrador.

Professor BROWN GOODE was very pleased to express his great satisfaction with the paper just read, which seemed to him by far the most complete and satisfactory *résumé* of the fisheries of Canada he had ever heard, and contained many points of great interest. There were one or two things, however, concerning the Canadian fisheries which probably Mr. Joncas' modesty forbade him to refer to, but which he would like to mention. In the first place he would refer to the immense growth of the Canadian fisheries during the last ten years. In the course of his own studies he had occasion each year to peruse the Canadian Reports, and had been perfectly amazed at the rapidity with which this industry had developed. He also knew it to be a fact that the fishing vessels of Canada, and especially of the United States, had improved wonderfully in speed, size, and in general seaworthy qualities. He also wished to refer to the point which Mr. Joncas had not touched upon quite so much as he might have done, namely, the very efficient Government system of inspection which Canada had worked out. It seemed to him that the Canadian Department of Marine and Fisheries was one of the most valuable organizations in the world, and that their system of gathering statistics was one which other countries ought to study with a great deal of care. In the United States they had nothing of the kind. They had an inspection in 1880, but there was no permanent organization for gathering statistics. Another matter which he looked upon with admiration was the great progress Canada had made in fish culture during the last twenty years, and more especially under the direction of Mr. Wilmot, who was one of the pioneers of fish culture in

America. Another thing he ought to mention was the indebtedness of the United States to Canada, and especially to Nova Scotia, for the immense number of fishermen who came to the States every year. The Nova Scotia fishermen in the Port of Gloucester were numbered by thousands, where a large number of the finest vessels were manned and officered by them. Many of them came there and settled for life in Massachusetts, whilst others did so for a period of years, and returned home when they had achieved a competence. The fisheries of Canada and of the United States were so closely interwoven in all their interests that they really should be considered together, and compared very carefully with each other, and some calculations he had made convinced him that the annual production of the two countries amounted to more than all Europe, Great Britain excepted, namely, from 120 to 150 million dollars annually. It seemed to him that in Canada, as well as in the United States, the resources of the sea had hardly yet been appreciated. Here were millions of pounds of the most valuable food products annually wasted, and no doubt one of the results of this Exhibition would be that they would learn to make better use of them than they had hitherto done.

Dr. FRANCIS DAY said he had intended moving the vote of thanks for this interesting paper, but as that had already been done, he would only say a few words in continuation of the remarks which had been made. He quite agreed in what had been said, that these fisheries were still almost in their infancy, but still they found it necessary to protect them. In England they found in some places they did well by placing certain restrictions on the fisheries as carried on, especially in protecting the lobster fisheries.

Sir PHILIP CUNLIFFE OWEN said it was now his pleasing duty, as a member of the Executive, to propose a

cordial vote of thanks to the Hon. Mr. McLelan, the Minister of Fisheries of the Dominion, and he thought the very fact of his taking the chair at the Conference, as a Minister of an important government, such as that of Canada, was a proof of the importance which that government attached to the protection and development of the fishing industries there. This gentleman, who had come over on the part of the Dominion Government, and lended lustre on the Exhibition by his presence and active assistance, was, he believed, the only Minister of Fisheries throughout the civilized world. They had heard from Professor Brown Goode that there was none in America, and he knew that in Europe such a minister did not exist, and he wanted this fact to come home to them all. It was important that it should come home to all their foreign friends, and leave them to feel the great importance it was to the civilized world generally, to protect that which Providence had given them so bountifully. They knew well that our teeming population in London depended a great deal on fish as food, and if they knew as much about it as one gentleman who had already spoken, and as Sir Henry Thompson, and many others including himself, did, they would know the benefit of not only one, two or even three fish dinners a week, but of fish and nothing but fish as food. They might smile at this, but he was convinced they would all feel healthier and better men and women if they were to live on fish. But there was another point which greatly affected the female portion of the population, and that was that they should know how to cook fish; unfortunately they did not know, and would not take the trouble to learn; but it was very important for the working-classes, and for them all, that their wives and housekeepers should know the variety of ways in which they could put before their hungry and tired husbands a good meal of

fish. There was not a very large audience present ; but that was because people knew that within a few days they would be able to read this very interesting and admirable paper of Mr. Joncas. He was much pleased as a member of the Executive to tender their thanks to him for his contribution, which no doubt would be studied in this country, and would be translated into every foreign tongue. The literature which was being prepared in connection with this Exhibition was, to his mind, with the little experience he had of exhibitions, the most important monument and record which had ever existed in any exhibition, because these were not dry blue-books of statistics, but interesting essays by practical men, who had come from all parts of the world to enlighten us in the knowledge for which they were distinguished ; that knowledge would be spread over the length and breadth of the land, and he trusted very much that a system would be inaugurated during the coming winter whereby these essays might be read to large numbers of the fishing population, and he knew very well the interest with which they would be received, and the great benefit which might be expected to accrue. He could only assure Mr. McLelan that his presence was hailed with gratitude, and he was never tired of expressing to him and to the Dominion how glad they were to be able to receive him in the mother country, and how proud they were to have such intelligent and remarkable sons, showing the way to that which we had not yet learnt ourselves, and giving us lessons which we in this old country were willing to listen to, and he hoped to profit by.

Mr. WILMOT, in seconding the motion, said he felt sure the presence of the Minister of Marine and Fisheries had added much to the welfare of their great Exhibition, and when they learned that he was the only Minister of fisheries present, he thought that fact said a great deal for the

country which sent him here. Had he been in Canada, he would have spoken more fluently than he could hope to do, because it was stated that in Canada about 100 lbs. of fish were eaten by each inhabitant annually, whereas here, they only ate 30 lbs. ; he had certainly not eaten as much fish in this country as he did at home, and therefore the intelligence which was supposed to arise from the eating of fish would not be so manifest with him. This Exhibition was fraught with a good deal of good or harm. Good if they took hold of the sentiments put forward by Sir Philip Owen, but if of sentiments derogatory to fishing interests, which were put forward in what was to be considered one of the text-books of the world hereafter, then great injury would be the consequence. His friend and associate from Canada, Mr. Joncas, had read a most lucid and instructive paper; and, without desiring to eulogise it too much, he must say that if like views were in the inaugural address, it would have been fully better, and superior to those which were read, because there was a ring about this which meant protection to the fisheries of the world, whilst in that which was read, there was a prevailing sentiment that no protection was wanted, and he contended it was very injurious to put forward the idea that protection was not required. What did they find in this paper? That in Canada, a young country, fishermen found already that they had to go farther away to catch the fish. The fish came in near the shore to spawn, and went out into the deeper waters again to feed, and when an article of food like fish came to the shores of any country to reproduce they should be protected in that act, and not slaughtered as they invariably were. Was it not agreed that they should protect salmon when they came into the rivers to breed? Laws were passed, saying that men should not kill salmon for a certain period when on the

spawning grounds, and did not the same laws of nature hold good with regard to other fish? If any animal were destroyed in an advanced state of pregnancy, it was a mere matter of time to exterminate it, and if the herring or cod came from the deep waters to our shores to reproduce their species should it not be the duty of those who conducted the affairs of the country, to say that man should not destroy the pregnant creature, because by refraining from doing so a much larger quantity would be produced hereafter. What possible harm could there be to the fisherman to do this? it was doing him good; he would reap more fruit from it, and, not only he, but posterity after him. It was, therefore, in his opinion, the duty of Legislatures to pass some such measures as would prevent people continually killing these fish. There were twelve months in the year, and if during those twelve months there was one when the cod came to deposit their eggs and another one when mackerel came to spawn, why should not man be restricted during those particular months, and allowed to catch fish during the other eleven. Why should he fish 365 days in the year? It was found that the principal cod, herring, and mackerel fishing was within a certain distance of the shore, they were not caught so much in the greater depths of the ocean. Many people said the sea could not be exhausted, but that was a fallacy, because in every civilized country of the world they were using means to increase the number of fish, and it was evident that they found they were getting less and consequently were anxious that something should be done. Britain was one of the countries which did not pass laws for the protection of fish in the sea. All along the coast of Norway and Sweden fish were getting scarce, and within the three or four miles' limits where they used to catch cod, they were almost gone. They had to go farther and farther, showing clearly that

they had destroyed them on the nearer limits. Professor Goode, in his lecture the other day, intimated that it was unnecessary to pass laws for the preservation of fish in the sea, but now he said that in Canada the progress was very satisfactory because it had judicious laws for the preservation of its fish. Within the last twenty-four hours he had received a letter from a very shrewd and clever fisherman of the Bay of Chaleur, in Canada, in which he said that (on account of the protection given and the immense number of young fry turned out into the rivers), on the 12th June, the day he wrote, they had caught more salmon than were caught last year altogether. He said—

“DEAR SIR,—I have been down here since the 1st, and am glad to say I have got more salmon already than the whole number we had last year, and every appearance of a very fine catch, and oh! such beauties, and even prettier fish than the old Restigouche salmon. So far they give an average of twenty-two pounds; of course markets are down, Montreal and New York glutted; we are now freezing the fish. My son wrote me from the Restigouche fishery on Saturday, telling me that he put 300 salmon in his freezer that day averaging $25\frac{1}{2}$ pounds each, and says they are better than the ‘big run’ of 1879. Now, Mr. Wilmot, I am pleased at this, and I am sure you will be; but I confess it is nothing more than I anticipated, notwithstanding the jeers and scoffing of such poor narrow-minded wretches, who, carried away by spite, envy and malice, have done all they could to bring our efforts into public contempt; even parties from whom better would have been expected were almost convinced by these specious pleas, until the clear necessity and benefits of artificial breeding were shown as overcoming the natural losses of eggs and young fish from ice freshets, etc. * * *

"I hope your Exhibition is a success, as I know you will try to make it. If you can find time do drop me a line.

"Yours, etc.,

"JOHN MOWAT."

Some people said that the fisheries were inexhaustible, and if we could get practical knowledge that that was so, he would not object to it, but they had only theoretical knowledge of it. They were told the other day of a peculiar case which would prove that the sea was inexhaustible of fish, but if a theory were built on a theory there ought to be some practical basis to commence with. If it were theoretical from beginning to end it could be of no value. Having read the passage from the opening or inaugural address referring to the cod at the Islands of Lofoden, Mr. Wilmot said that was put forward to substantiate the theory that fish were so numerous that it was impossible to exhaust them, and, therefore, it was unnecessary to have judicious laws to protect them. He contended on the contrary that there was not a tittle of foundation to show, because codfish might be numerous there, that it was not necessary to protect them. There were 27,800,000 and odd square feet to the mile superficial measure. That would give 185,956,000 cod fish, supposing them to be in 60 layers 180 feet in depth. It was said they came in all along the coast continuously for two months, as the coast could not be less than 50 miles, that would give 9,000,000,000 of cod fish, and as they came in for two months or 60 days, multiplying that by 60 it would be 540,000,000,000 of cod fish within that area of 50 miles along the shore, and adding $\frac{1}{10}$ for herring space, the food of the codfish, it would cover 64,566 superficial miles of ocean. When theories were commenced in that way it appeared to him to amount to an absurdity. It was wrong to put forward such data to

any intelligent community ; it was unfair to the community and unfair towards those who had laboured for so many years to protect fish, and unfair to all who had stood on that platform, most of whom accorded with him in his views that fish should be protected. If documents of this kind went forth it would do a vast amount of harm, and he hoped the intelligence of that audience and Great Britain would go with those who were anxious to get laws passed to protect fish universally, not select one kind of fish because it was comparatively easy to protect them, but all fishes should be protected, because mankind needed them all. It had been a labour of love with him for many years to study the habits of fish, and he regretted that, with many persons at the present time, there was too much theory and too much science without practical knowledge at the bottom of it.

The motion was then put by Sir P. C. Owen, and carried unanimously.

The CHAIRMAN, in responding, said he felt quite overcome by the flattering terms in which the resolution had been proposed, and the enthusiastic way in which the work which he and his government were doing in Canada had been spoken of. It was true that the Government of Canada felt a deep interest in the preservation of fisheries, because they knew how important it was to her people that those fisheries should be used, and not abused. Their object had been that what some scientific gentlemen there called the balance of nature should be preserved, or that it should not be too much broken. The balance of nature had been running for centuries before the fishermen came in, and the proper proportions of fish were all preserved ; the fishermen came in, and with their multiplied engines for destroying fish were likely to destroy the balance of nature, and so to destroy quantities of food fish, so important to

the people of the Dominion and other countries, for they believed with proper care they should have large quantities for export. Sir Philip Owen said they should all live on fish, and certainly in going to the meat markets of England there was a great inducement for people to live on fish if they could. But if they would come over to Canada, and take a free farm—such as they were ready to give to millions of people—of 160 acres of as fertile land as ever rain or dew descended upon, they would have not only fish to live upon, but good beef, mutton, and poultry, and all else they desired to make a variety on their table. The Government of Canada not only passed laws, but believed it was necessary to provide shelter and protection on the more exposed portions of the sea coast to protect the lives of the fishermen. They had heard from time to time how dangerous was this occupation, and that it showed the largest percentage of loss of life of any occupation in which man engaged. In Canada they built harbours and breakwaters to which the fishermen in exposed places could resort in case of sudden storm, and young as they were, and poor as they had been, they had expended about six million dollars for that purpose. They had also been told that sometimes fishermen went out and toiled all day and night but caught nothing, but the Government had also endeavoured to provide against that by laying down telegraph cables along the coast to all the stations, so that when the fish struck on any particular point they could telegraph to all the fishermen who at once could come there and load their vessels. Professor Goode had referred to the fact that a great many Nova Scotians went to the famous fishing-port of Gloucester and manned their vessels, and that was no doubt the case; they found that in the summer their own fishermen were employed off the coast, but in the winter season they went to the United

States because they had a better class of fishing-vessels for winter service, and could go out to sea with more safety ; they therefore encouraged the building of a better class of vessels in their own country, and for a number of years had devoted 150,000 dollars a year to this purpose, paying so much a ton for a better class of vessels, so that their own fishermen might be employed during the winter and not have to go to a foreign country. He had been referred to as a Canadian Minister to the mother country, and he must say it was a pleasure to him to be received in the kindly manner that he and his associates on the Executive Board had been received. He was proud of the phrase which he had used, coming to the "mother country." There was no name of which they were more proud in Canada than that they were sons of Great Britain ; that they were connected with this great Empire, so glorious in her past, so great and mighty in her present, and which had before her such a grand and magnificent future. They were proud to be connected with Great Britain, but they were proud also that they were no weak helpless dependent members of the Empire ; that they were no encumbering members, for they felt that they in Canada were bounding forward in prosperity ; they were going forward with a great tide of healthful blood flowing in their veins and beating in their hearts, hearts strong for the present, and big with hope for the future, and hearts which he trusted would long be true and loyal like British hearts when waked by the strains of "God save the Queen."

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